SPECIFICATION AMENDMENTS

Please amend the specification as indicated in the following:

At the Abstract:

~~A system and method for rate control of pre-encoded video content are disclosed herein.~~ ~~An~~ A local system encodes previously decoded video data using a transcoding quantization value based on a source quantization value provided by a previous encoder as part of the retrieved video data. The transcoding quantization value can be determined additionally based the fullness of the video buffer of a target system, where a measure of the fullness can be obtained directly from the target system or modeled by the local system. The video data is encoded by the local system and then provided to a target system for decoding and subsequent display and/or storage.

At page 10, lines 1-7:

Referring to FIG. 3, the effect of various quantization ratios applied to the source quantization value is illustrated according to at least one embodiment of the present disclosure. As discussed previously, transcoding quantization value 345 is determined by ~~dividing~~multiplying source quantization value 335 with quantization ratio 320, where quantization ratio 320 is generated by quantization ratio generator 241. As discussed previously, the source quantization value 335 may be a combination of a quantization scale value that is applied to each element of a DCT coefficient matrix and a matrix of quantization values corresponding to the DCT coefficient matrix.

At page 11, lines 12-17:

Referring next to FIG. 5, step 420 of method 400 (FIG. 4) is illustrated according to at least one embodiment of the present disclosure. Step 420 initiates with sub-step 510 where the bit consumption is compared to the bit budget. If the bit ~~budge it~~budget is not equivalent to the bit consumption, an attempt to match the average bit rate with the target bit rate (i.e. the channel bit rate) is made ~~in subset 515~~. In at least one embodiment, in order to compensate the error

between the bit budget and the actual bit consumption, the initial value is adjusted according to the equation:

At page 12, lines 5-15:

In sub-step 520, transcoding options including drop frame and scale video are evaluated and compensated for in [[step]]sub-step 525, if necessary. Compensation of scaling is done through the equation:

$$qRatio = qRatio \times (xscale * yscale)^{Z} \quad \text{(EQ.5-525.1)}$$

Where qRatio is the result of sub-step 510 and/or [[515]]525, xscale is the ratio between the input horizontal frame size and the output horizontal frame size, yscale is the ratio between the input vertical frame size and the output vertical frame size, and Z is a constant less than 1. In at least one embodiment, Z is 0.75 +/- .10. For example, assume that the input horizontal frame size is 704 pixels and the input vertical frame scale is 480 pixels, while the output horizontal frame size of the corresponding transcoded frame is 352 pixels and the output vertical frame size is 240. In this case, xscale would be 2 (704/352) and yscale would be 2 (480/240). Also, assume that Z is 0.75. In this case, the compensation factor would be approximately 2.83 (4 to the power of 0.75).

At page 13, lines 1-12:

In sub-step 530, the fullness of the video buffer is compared to first indicator value X and at sub-step 540 the fullness of the video buffer is compared to value X and the value of the quantization ratio is compared to the value of 1.0. Recall that the fullness of the target video buffer can be determined by modeling the video buffer, such as using a VBV buffer model, or characteristics of the video buffer can be obtained directly from the target system. If the buffer fullness is less than first indicator value X and the value of the quantization ratio is greater than 1.0, then value of the quantization ratio is set to a constant value Y in step [[535]]545. In at least one embodiment, Y is 1.0. By setting the quantization ratio to 1.0, the transcoding quantization

value will be the same as the source quantization value assuming no further modification of the value of the quantization ratio. In one embodiment, the quantization ratio is set to 1.0 because when the buffer fullness falls below first indicator value X, such as the buffer fullness falling below 75% of the maximum buffer capacity, the video buffer is assumed to be within desirable operating parameters, or at least not about to overflow.

At page 13, lines 14-30:

If the buffer fullness is larger than first indicator value X, then there is no further modification to the quantization ratio, this means the quantization level can be set as high as necessary (e.g. larger than 1.0) at ~~sub-steps 515 and/or 525~~sub-step 535 to avoid overflow of the target video buffer. Using quantization ratio larger than 1.0 means using quantization matrix values smaller than the source quantization matrix value, this will generally increase the transcoded frame size without quality gain (i.e. bits are wasted). So only when the target video buffer is risking overflow, in on embodiment, will quantization ratio allowed to be higher than 1.0. For example, if the buffer fullness is greater than 75% of its capacity, which means the video buffer may overflow unless the output data rate of the video buffer is increase, which can be accomplished by increase the data size of the following frames. The data size of the following frames, in one embodiment, can be increased by increasing the quantization ratio to generate a lower-valued quantization matrix, and consequently increase the frame data size. In sub-step [[540]]550, the fullness of the video buffer, is compared to a second indicator value Z. In one embodiment, second indicator value Z includes the value of 20% +/- 1% of the maximum buffer capacity of the video buffer. If the value representing the fullness of the video buffer falls below second indicator value Z, in one embodiment, the video buffer is considered to have a potential underflow, and the value of the quantization ratio is modified in sub-step [[545]]555. In one embodiment, a non-linear function is applied to the quantization ratio in sub-step [[545]]555, the non-linear equation as follows: